Transportation Systems Management & Operations (TSMO):

A Capability Improvement Workshop

San Luis Obispo
October 25, 2017

Reminder --Wide Range of Strategies to Match Causes of Congestion

Conventional Strategies

- Incident Management/FSO
- Freeway Management
- Work Zone Management
- Travel Weather Management
- Traveler Information/DMS/511
- Improved BRT/P&R
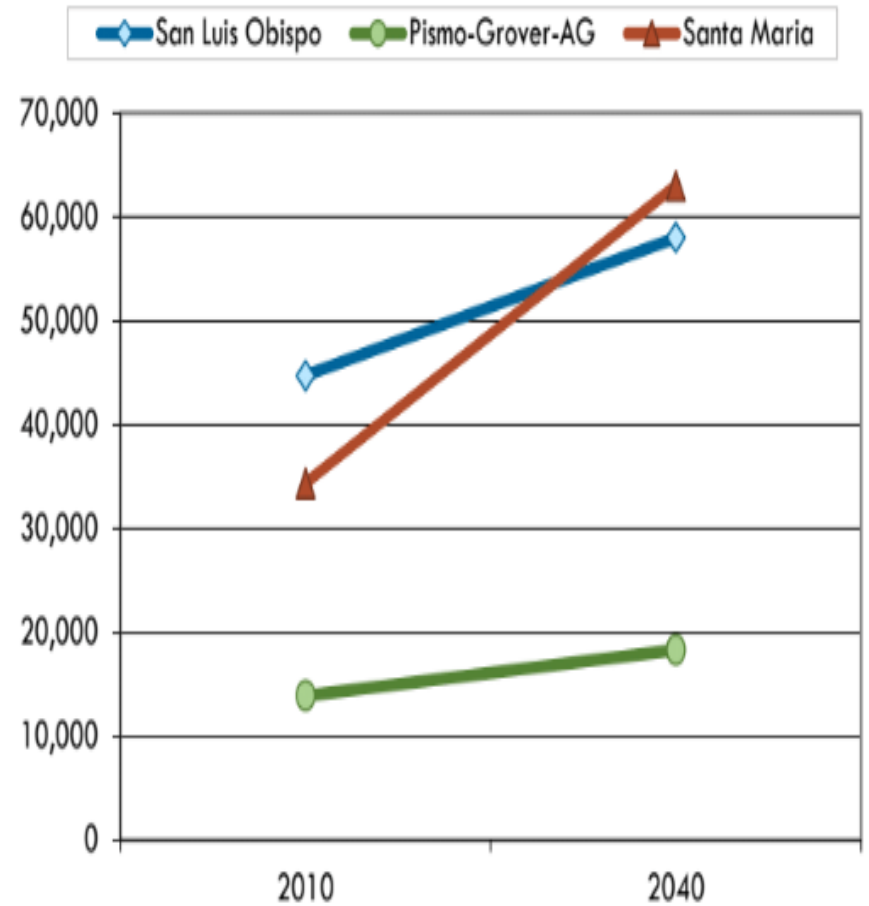- Ramp metering/shoulder use

Newer Strategies

- Traffic Responsive Signalization/Prioritization
- Integrated corridor Management
- Active (Freeway) Traffic Management
- Improved information for Demand Management
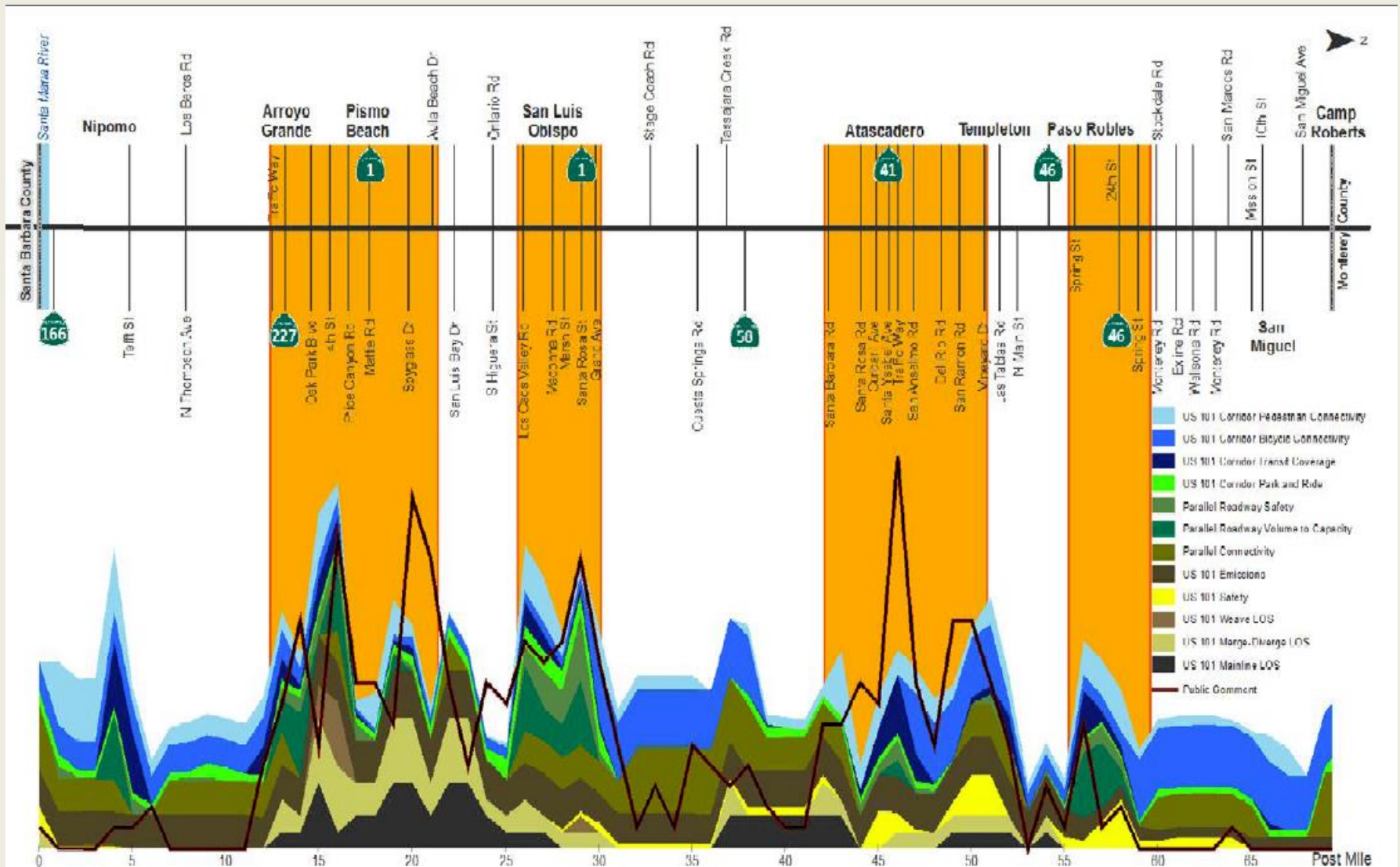- Eco-Driving

Corridor Region is Growing
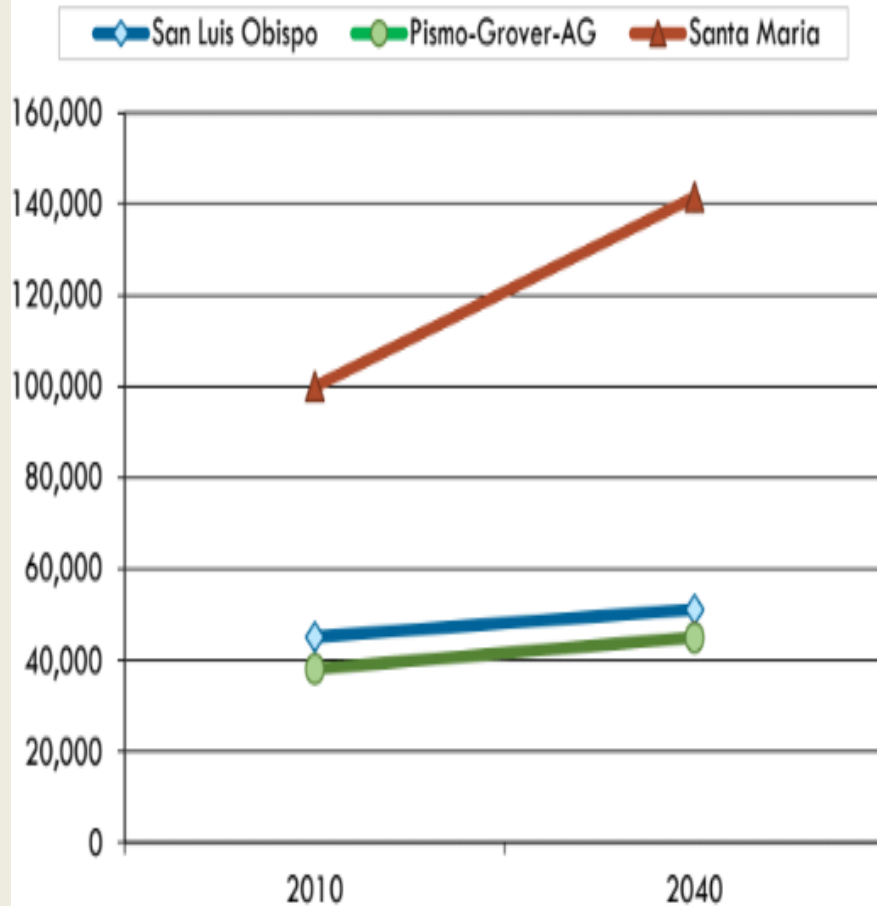
Corridor Performance

Widely Varying State of the Practice

QUICK CLEARANCE AND RECOVERY STRATEGIES	Abandoned Vehicle Hazards	Lengthy Minor Incident Clearance	Lengthy Major Incident Clearance	Liability Concerns	EXAMPLE APPLICATIONS
Abandoned Vehicle Legislation/Policy	●				21+ U.S. Metropolitan Areas, IN, NC
Safe, Quick Clearance Laws—*Driver Removal*		●			~25 States, including FL, GA, MD, NC, OH, SC, TN, TX, VA, WI
Service Patrols		●			130+ U.S. Metropolitan Areas, AZ (Phoenix), CA, FL, GA (Atlanta), IN, MD, MN, NM (Albuquerque), OR, TN, UT (Salt Lake City)
Vehicle-Mounted Push Bumpers		●			CA (Redding, Stockton), MD (Baltimore), NJ/PA (Delaware Valley Region), OH (Cincinnati), TN (Chattanooga), TX (Austin), UT (Salt Lake City)
Incident Investigation Sites		●			16+ U.S. Metropolitan Areas, TX (Houston)
Safe, Quick Clearance Laws—*Authority Removal*		●	●	●	AZ, CA, CO, FL, GA, IL, IN, KY, MO, NM, NC, OH, OR, SC, TN, TX, VA, WA
Quick Clearance/Open Roads Policy		●	●		35+ U.S. Metropolitan Areas, CA, FL, GA, ID, IN, LA, MD, NV, NH, TN, UT, WA, WI
Non-cargo Vehicle Fluid Discharge Policy		●	●		FL, MN
Fatality Certification/Removal Policy			●		PA, TN, TX (Austin), WA
Expedited Crash Investigation			●		93+ U.S. Metropolitan Areas, FL, IN, TX (North Central Region), UT
Quick Clearance Using Fire Apparatus			●		TX (Austin)
Towing and Recovery Quick Clearance Incentives			●		FL, GA, WA
Major Incident Response Teams			●		DE, FL, IL (Chicago), LA, MD, NJ, OH (Cincinnati, Columbus), NY, TX (Dallas Co.), WA

Further Capability Improvements

Objective – "mainstreaming" continuous improvement

Key differentiators – not projects – but improvements in processes and arrangements that support continuous improvement – "*Institutionalize*"

Workshop process – helps regions evaluate and improve key capabilities – from any starting point –

60+FHWA-sponsored state DOT and regional workshops nationwide/ 5 in CA

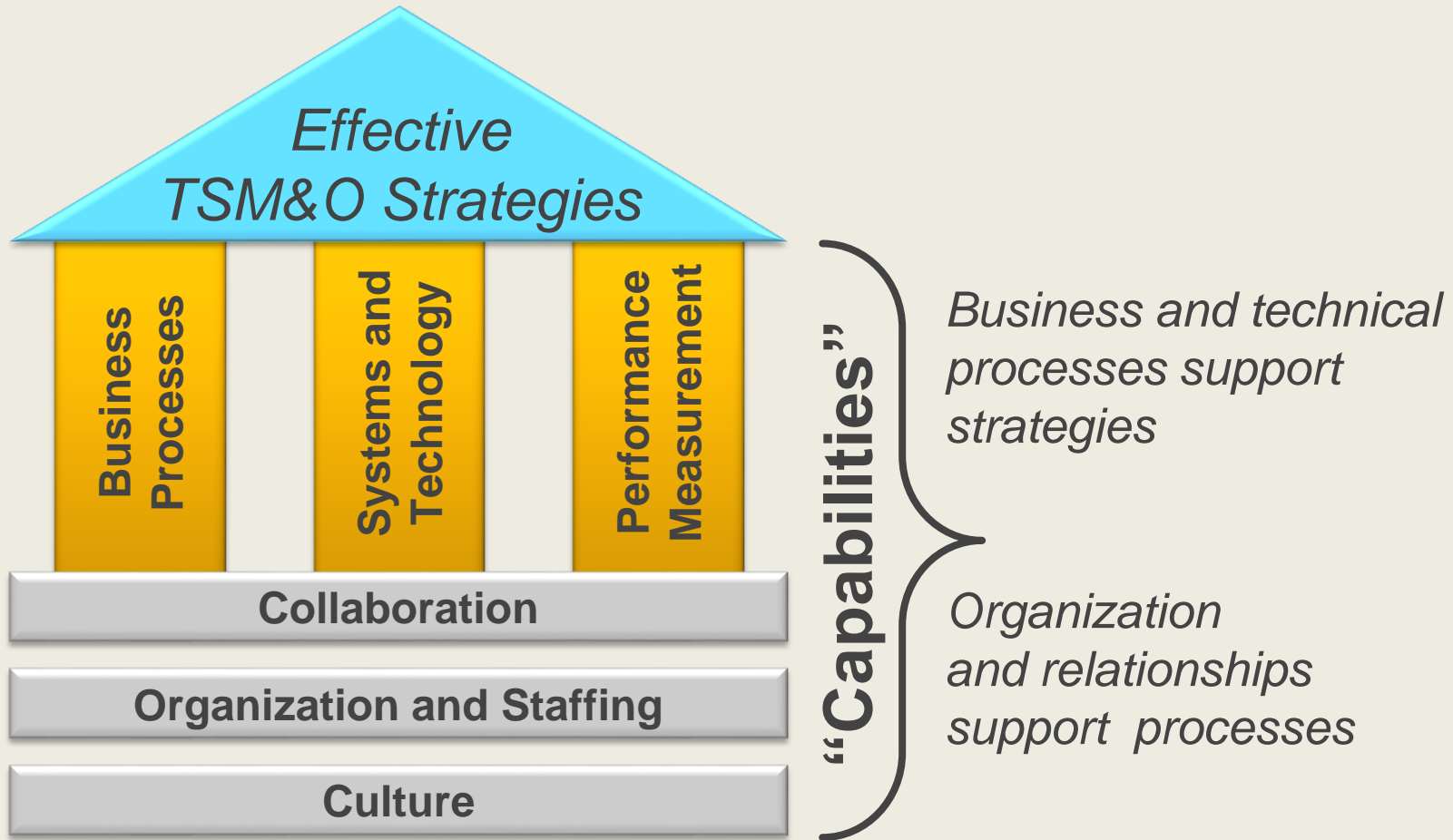Creating an Effective Program to Advance Transportation System Management and Operations

Primer

U.S. Department of Transportation
Federal Highway Administration

Beyond ITS "Projects": Keys to Successful Implementation

- key business and technical process for effective (routine) implementation is essential to increased impact

- Formal organizational structure and collaborative relations key

Example: Incident Management – combination of ITS infrastructure, Management Center with multi-jurisdictional participation, integrated communications, pre-defined procedures and protocols, close transportation/PSA cooperation and co-training, private sector participation & incentives, performance measurement, after-action analysis ……………………

The Structure of Capability

Effective TSM&O Strategies

Business Processes

Systems and Technology

Performance Measurement

Collaboration

Organization and Staffing

Culture

"Capabilities"

Business and technical processes support strategies

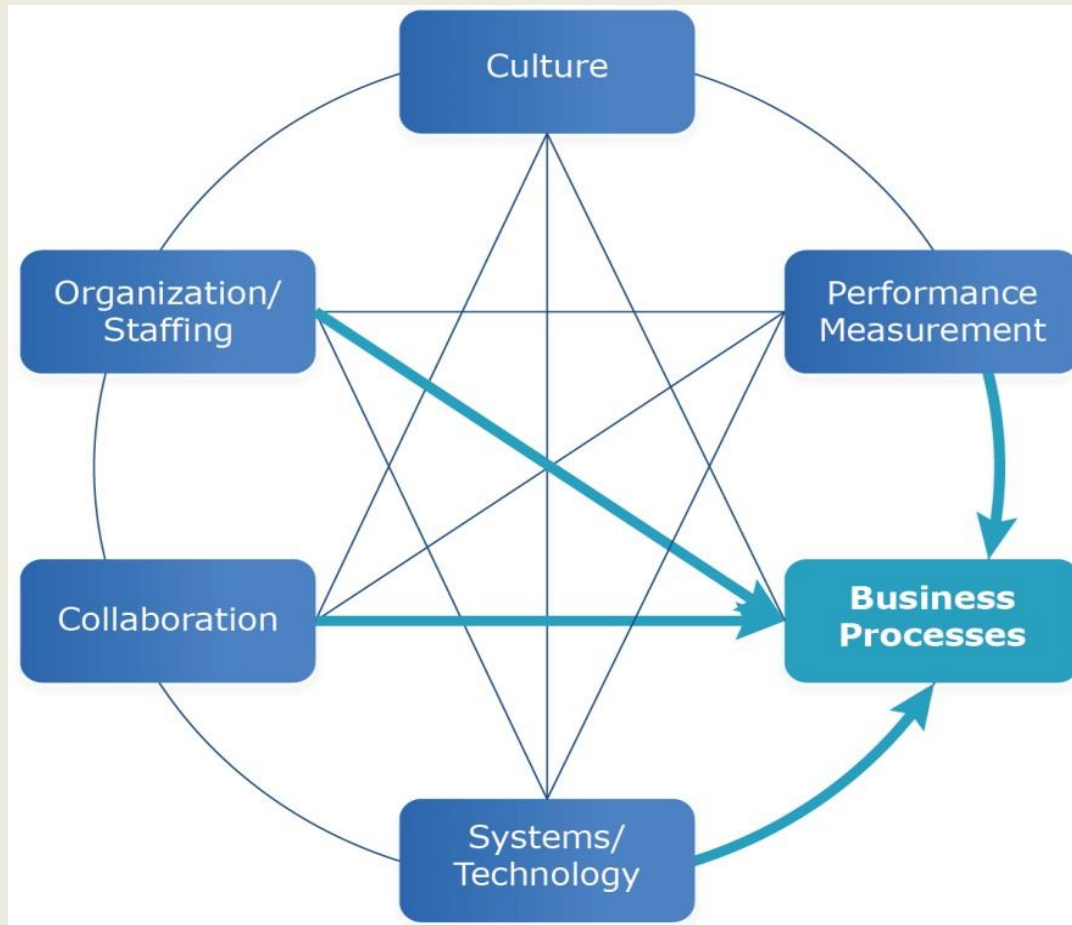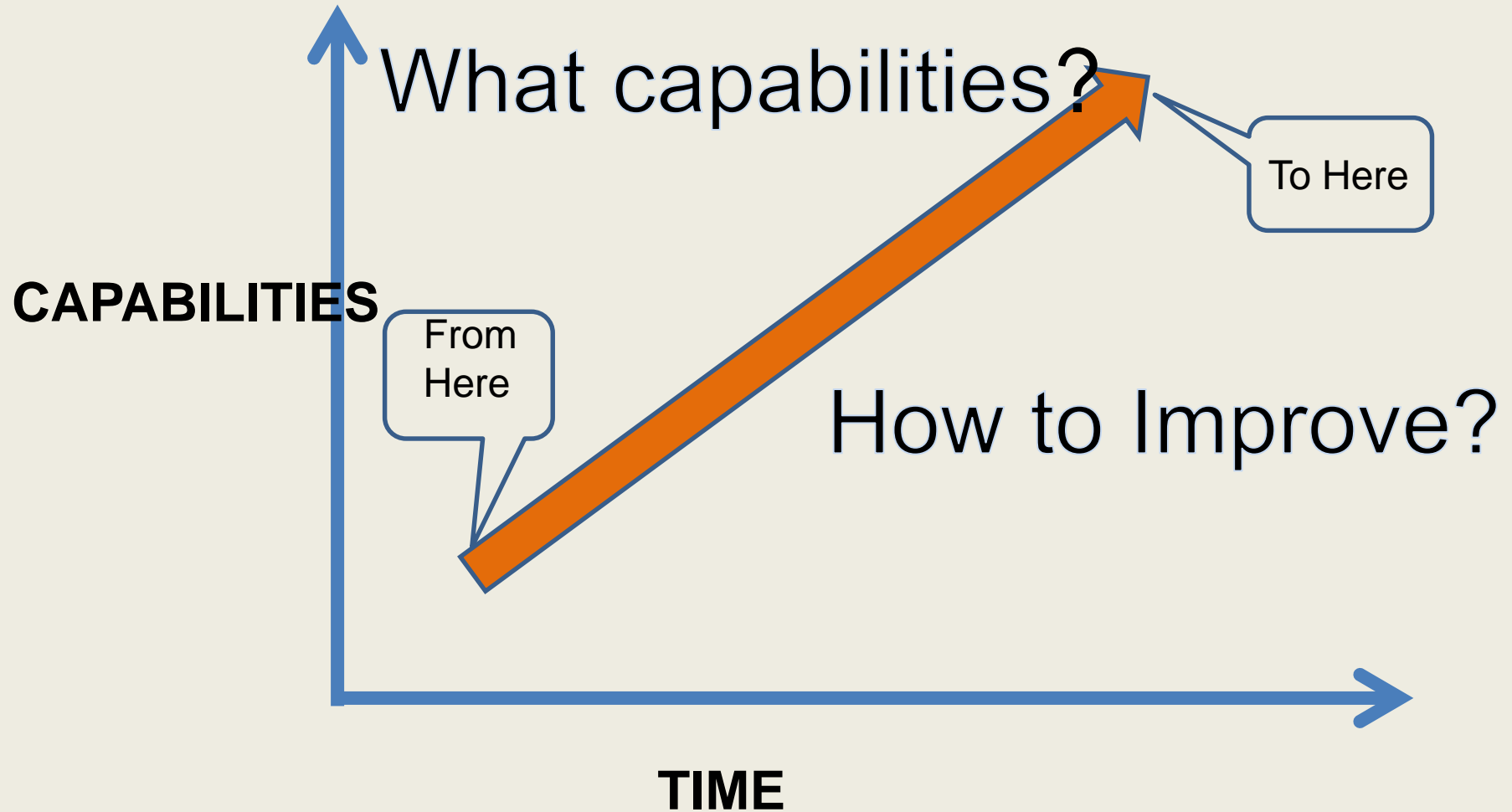Organization and relationships support processes

The 6 Dimensions of CMM

1. **Business Processes,** including planning, programming and budgeting (resources) and project development and procurement.

2. **Systems and Technology, including use of systems engineering**, concepts of operations, systems architecture standards, interoperability, and standardization.

3. **Performance Measurement,** including measures definition, data acquisition, analytics, communication and utilization.

4. **Culture,** including technical understanding and business case, leadership, outreach, and program legal authority.

5. **Organization and Staffing,** including programmatic status, organizational structure and accountability, staff capabilities, training/development, and recruitment and retention.

6. **Collaboration,** including relationships with public safety agencies, local governments, MPOs, and the private sector.

Synergism among Dimensions

Capability Levels (for each dimension)

Goal for the Future

**Where does the region stand
For each dimension??**

LEVEL 4
Optimized
- Performance-based improvement
- Formal program
- Formal partnerships

LEVEL 3
Integrated
- Process documented
- Performance measured
- Organization/ partners aligned
- Program budgeted

LEVEL 2
Managed
- Processes developing
- Staff training
- Limited accountability

LEVEL 1
Performed
- Activities & relationships ad hoc
- Champion-driven
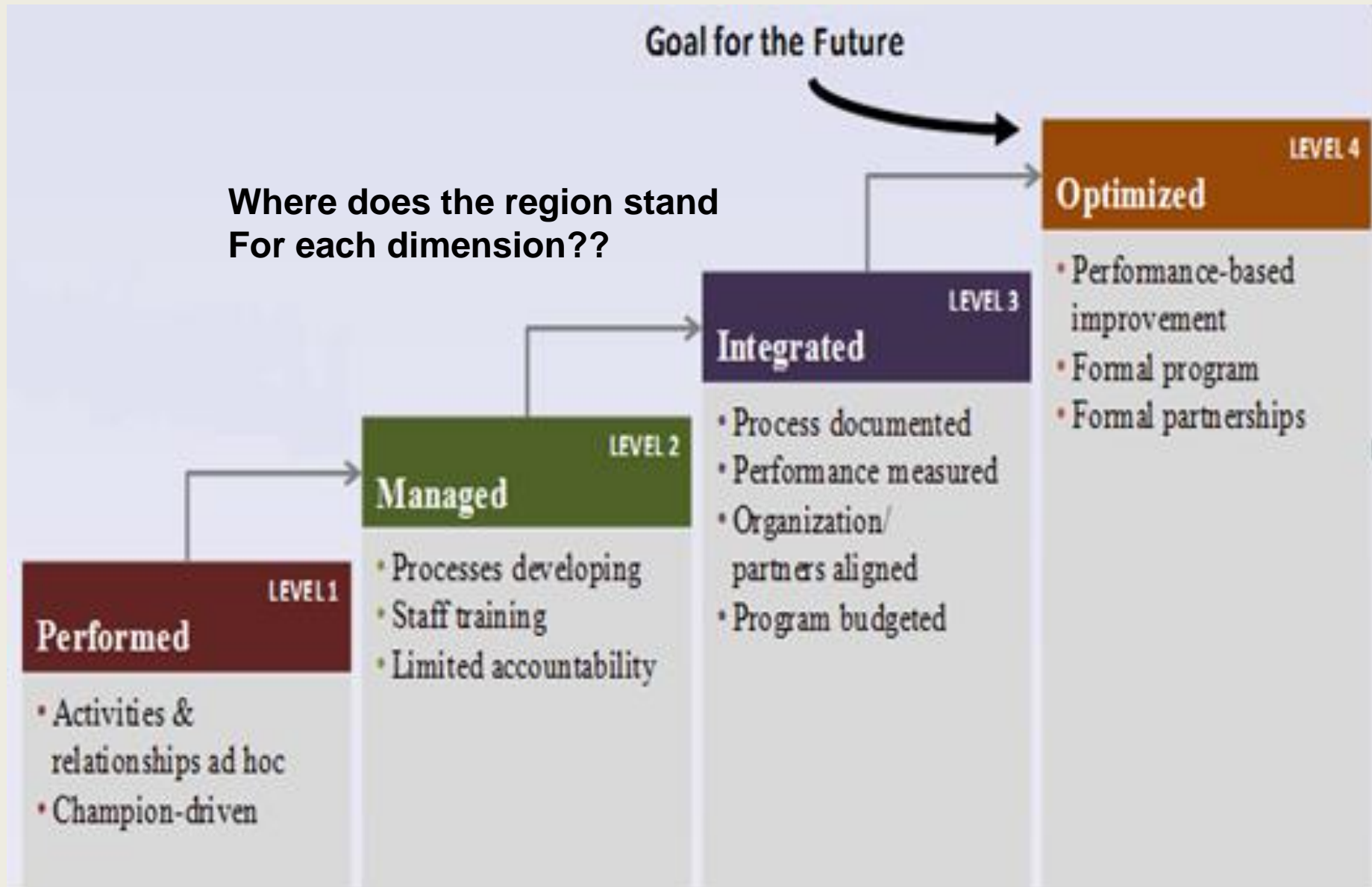
Focus of Capability Improvement Workshop

Objective: Given the current state of play – how to get better

Approach – a structured dialogue among key participants that focuses on most effective process and institutional changes that will serve as the basis for continuing improvement

"The answers are in this room"

Capability Level Self Evaluation Structure

ELEMENTS	LEVEL 1 PERFORMED	LEVEL 2 MANAGED	LEVEL 3 INTEGRATED	LEVEL 4 OPTIMIZING
Planning & Programming		X		
Systems & Technology			X	
Performance Measurement	X			
Culture			X	
Organization/ staffing		X		
Collaboration			X	

Lowest level is constraint

TSM&O Criteria Template

Level Criteria for Dimensions	1. Performed	2. Managed	3. Integrated	4. Optimizing
Business processes (Planning, programming),	Each jurisdiction does its own thing according to individual priorities and capabilities	Consensus regional approach developed regarding goals, deficiencies, B/C, networks, strategies and common priorities	Regional program integrated into jurisdictions' overall multimodal transportation plans with related staged program	TSM&O integrated into jurisdictions' multi-sectoral plans and programs, based on a formal, continuing planning processes
Systems engineering, and technology	Ad hoc approaches to system implementation without consideration of systems engineering and appropriate procurement processes	Regional conops and architectures developed and documented with costs included; appropriate PD & procurement process employed	Systems & technology standardized and integrated with supportive decision-support, related processes and training as appropriate	Architectures and technology routinely upgraded to improve performance; systems integration/interoperability maintained on continuing basis
Performance measurement,	Some outputs measured and reported	Output data used directly for after-action debriefings and improvements; data easily available and dashboarded	Outcome measures identified (networks, modes, impacts) and routinely utilized for real-time objective-based program improvements	Performance measures reported internally for utilization and externally for accountability and program justification
Culture, leadership,	Individual Staff champions promote TSM&O	Jurisdictions' senior management understands TSM&O business case and educates decision makers/public	Regional consensus on mission, priorities and benefits with formal program and achieves wide public visibility/understanding	Customer mobility service commitment accountability accepted as formal, top level core program of all jurisdictions
Organizational structure/staff capabilities	TSM&O added on to units within existing structure and staffing -- dependent on technical champions	TSM&O-specific organizational concept developed within/among jurisdictions with core capacity needs identified, collaboration takes place	TSM&O Managers have direct report to top management; Job specs, certification and training for core positions	TSM&O senior managers at equivalent level with other jurisdiction services and staff professionalized
External collaboration public, private	Relationships ad hoc, and on personal basis (public-public, public-private)	Objectives, strategies and performance measures aligned among organized key players	Rationalization/sharing/formalization of responsibilities among key players through co-	High level of TSM&O coordination among owner/operators (state, local, private)

15

How the Capability Improvement Workshops Work

1. Participants Identify regional state of play – consensus on strengths and weaknesses

2. Participants Identify current level of capability (criteria)

3. Participants Identify actions to get to next level

4. Participants' follow up: Use structured action list to plan for achievement and secure commitment

Discussion Template Utilized

DIMENSION: Business Processes (Planning and Programming)				
Strengths			**Weaknesses**	
• Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx • Xxxxxxxxxxxxxxxxxxxxxxxxxxxx • xxxxxxxxxxxxxxxxxxxxxxxxx			• Xxxxxxxxxxxxxxxxxxxxxxxx • Xxxxxxxxxxxxxxxxxxxxxxx • xxxxxxxxxxxxxxxxxxxx	

	LEVEL 1 — PERFORMED	LEVEL 2 — MANAGED	LEVEL 3 — INTEGRATED	LEVEL 4 — OPTIMIZING
Level Criteria	Processes not established related to TSM&O (ad hoc, informal, un-integrated within and among jurisdictions), projects opportunistic	Consensus TSM&O planning/programming approach developed (regional, corridor) with formal TSM&O goals, deficiencies, B/C, networks, strategies -- (but not integrated into SW/Metro plans/programs)	Regional/corridor TSM&O plan/program(forecasting and analysis and proj. dev. process developed and integrated into jurisdictions' overall multimodal planning/programming/proj. dev process – level playing field	TSM&O integrated into jurisdictions' multi-sectoral planning and programming process on a life cycle basis
Consensus (2017)				

Actions to Advance to the Next Level
• xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx • xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx • xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx